

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																										CHEMICAL ELEMENTS																									
<p>6A</p> <p>Chemical formulas of tourmaline, axinite, and dumortierite. V. I. Lebedev. <i>Compt. rend. acad. sci. U.R.S.S.</i> 47, 635-9 (in English); <i>Doklady Akad. Nauk S.S.S.R.</i> 47, 661-5 (1945).—The formula of tourmaline is <math>H_2B_3Al_3Si_3O_{11} \cdot 2.2-3.0 RO</math>. RO may be predominantly <math>MgO</math> and <math>FeO</math> (schorl-dravite series) or <math>Al_2O_3</math> (elbaite series); other oxides never rise above 1 RO. The kaolin mol. is considered the basic mol. of tourmaline; axinite <math>[H_2B_3Al_3Si_3O_{11} \cdot 2Ca_2SiO_4 \cdot 2(Fe, Mn)SiO_3]</math> and dumortierite <math>[H_2B_3Al_3Si_3O_{11} \cdot 2Al_2SiO_5 \cdot 4Al_2O_3]</math> differ only in the compn. of the RO group. In late- and post-magmatic processes in acid magmas, the variety of tourmaline formed depends on the abundance or lack of <math>MgO</math> and <math>FeO</math>. If Ca is present, axinite forms; if Al is abundant and <math>SiO_2</math> low, dumortierite forms.</p> <p>Marlorie Hooker</p>																										8																									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>SECTION: STEELING</p> <p>SECTION: MET. CHEM.</p> <p>SECTION: MET. PHYS.</p> <p>SECTION: MET. MECH.</p> <p>SECTION: MET. THERM.</p> <p>SECTION: MET. CORROSION</p> <p>SECTION: MET. SURF.</p> <p>SECTION: MET. WELDING</p> <p>SECTION: MET. COATINGS</p> <p>SECTION: MET. TREATMENT</p> <p>SECTION: MET. TESTING</p> <p>SECTION: MET. THEORY</p> <p>SECTION: MET. HISTORY</p> <p>SECTION: MET. GENERAL</p>																																																			

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
COMMON ELEMENTS																										COMMON VARIABLES INDEX																									
<p><b>PROCESSES AND PROPERTIES INDEX</b></p> <p><b>Problem of the kaolin nucleus.</b> V. I. LEBEDEV. <i>Compt. rend. acad. sci. U.R.S.S.</i>, 51, 57-60 (1946); abstracted in <i>Chem. Zentr.</i>, 118 [1/2] 98 (1947). A critical survey of the literature leads to the conclusion that the endothermal properties of kaolin are not due to its nucleus, but must be ascribed to the kaolin itself. The properties are not especially characteristic of the combination of <math>Al_2O_3</math> with <math>SiO_2</math> (of the type <math>Al_2Si_2O_7</math>), but of the <math>Al_2O_3</math> in octahedral packing, and they appear in case of a transition of <math>Al_2O_3</math> into a tetrahedral packing. M.H.A.</p>																																																			
<p><b>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</b></p>																																																			
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LEBEDEV, V. I.

3

[ State of oxygen chemically combined in silicates, and related mineralogical problems. V. I. Lebedev. *Vestnik Leningrad. Univ.* 3, No. 3, 17-30, 1968. Ionization potentials and electron affinities of the elements occurring in common rock-forming silicates are discussed, especially the role of oxygen which is commonly assumed to be in the bivalent, doubly charged anion state  $O^{--}$ , and the ionization potentials of Si. It is concluded that the role of Si-O bonds in silicates can be fully understood only if O is assumed to exist as a univalent, singly charged anion, and that Si reacts as the bivalent, doubly charged cation. These assumptions explain the partially ionic, partially covalent character of bonding in silicates which was first made evident by Brill, Hermann, and Peters (*C.A.* 34, 13') in the accurate detm. of the electron-density distribution in the quartz structure. The ratio of Si:O (or the corresponding ratio (Si + Al):O in aluminosilicates) varies for igneous rock minerals from 4:1 to 2:1. The most striking deviations in the bonding character which are detd. by the correlation of ionization potentials of valence electrons in the constituting elements are observed in the formation of metamorphic and hydrothermal minerals, by the presence of  $H_2O$ . These phenomena are explained by a process of "genetic inheritance," valid for the structural principles. Atoms O in special positions in which they cannot exert their tendency to bind Si in the covalent type, e.g. in amphibole, talc, or the kaolinite minerals, easily bind H to form  $OH^-$ . In these groups, the hydrogen is much more analogous to Si than to alkali metal ions. The heat of formation of  $\beta$ -quartz is calcd. in a thermodynamic Born-Haber cycle process, combined with the Born-Landé equation for the lattice energy to be 184 kcal. (exptl.  $193 \pm 4$  kcal.). The theory overcomes many difficulties of the classic theory of ionic radii which cannot satisfactorily explain why Al is either structurally equiv. to Si, or to Mg, with different coordination groupings with O.

W. Eitel

LEBEDEV, V. I.

Lebedev, V. I. "On the problem of the methods of developing Soviet mineralogy and the problem of the power engineering of silicates", (In connection with the article by V. S. Sobolev entitled "The significance of the coordination number of aluminum in silicates", in Mineral. sbornik, (L'vovsk. geol. o-va), No. 1, 1947), Vestnik Leningr. unta, 1948, No. 11, p. 46-68, Bibliog: 36 items.

SO: U-4630, 16 Sept. 53, (Letopis 'Zhurnal 'nykh Statey, No. 23, 1949).

LEBEDEV, V. I.

The mineralogical volume rule and the energy of chemical bonding. V. I. Lebedev. *Doklady Akad. Nauk S.S.S.R.* 63, 437-40 (1948). The classical vol. rule in the mineralization of metamorphic rocks is a particular expression for the more generalized Le Chatelier principle of reaction. It was early observed that among the characteristic rock-forming minerals only the Fe Mg silicates obey the vol. rule exactly, while the aluminosilicates (feldspars, nephelite, leucite), and quartz show anomalies; their mol. vol. is larger than that of the sum of the ingredient oxides. Belov's (*Struktura ionnykh kristallov*, 1947 (C.A. 42, 4831d) principle of densest packings in crystal structures was formulated as a general tendency of crystg. material. But a discussion of the structural details in the mineral pairs kyanite-sillimanite and aragonite-calcite shows that the densest structures (in the geometrical meaning) do not correspond to the lower mol. vol. The tendency to form densest packings is only a part of a more generalized principle derived from the discussion of the energy changes in forming ionic and covalent bonds in the crystal structures. The difference of the prevailing ionic bonding in  $SiP_4$  and the 50% participation of covalent bonding mechanisms in quartz illustrates the contrasting energy conditions, e.g. in the thermochem. consts. of heat of formation. For the formation of such open structures, frameworks, etc., as are known in the  $SiO_2$  modifications, the feldspars and feldspathoids, etc., and for

the polymorphic inversions of kyanite to sillimanite, or aragonite to calcite, the energy conditions indicate the prevailing effects of covalent bonding. While ionic bonding is highly energy-absorbing, covalent bonding requires very little energy absorption. The geometrical principle of a tendency to form dense packed structures combined with a general principle of min. energy absorption is essential in the conditions of reactions with vol. changes. The vol. rule is, therefore, restricted by a more general law which is called "principle of energy suitability" and comprises both factors mentioned.

W. Eitel

EH  
7-16-54

LEBEDEV, V.I.

Some remarks on L.A. Kosoi's article "Simple methods for determining  
the composition of garnets." Uch.zap. LGU no.93:109-112 '48.

(MIRA 10:10)

(Garnet)

CA

8

ment of perovskite by ilmenite is described as a reaction combined with the change of magnetite in pyroxene. Features of ilmenite (Kachela). These are interesting because of their association with a brown-black phlogopite. The interspersed titanomagnetite is characterized by the intimate regular intergrowths of ilmenite on octahedron faces, and by spinel inclusions. The perovskite is somewhat younger than the Ti magnetite. The primary pyroxene is intensely changed to a mixt. of light-green actinolite, phlogopite, and calcite. The phlogopite is characterized by an anomalous absorption similar to that of magnophyllite, but no Mn was found in it. The microscopic examination in reflected light shows that the magnetite is often completely broken down to an aggregate of secondary minerals among which ilmenite is strikingly most stable. Sometimes an ilmenite is observed as a thin seam between the primary perovskite and the ilmenite.

**Ilmenization of perovskite** A. L. Chesley and O. M. Rinskaya-Korsakova. *Doklady Akad. Nauk S.S.S.R.* 66, 25, 1970. The rare phenomenon of a replacement

ASD SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

**Amphibolization of pyroxene** V. I. Lebedev, *Doklady Akad. Nauk SSSR*, 75, 100 (1955). — In the Purozhichnaya Varaha (N. Karelia), contacts between a basic rock with biotite gneisses are observed in which pegmatite veins are frequent which contain very coarse idiomorphic crystals of a grass-green pyroxene (up to 50 cm. length). This pyroxene is strongly changed to amphibole, and epidote, calcite, and chlorite in low units, show the metasomatic character of the reactions which took place in the amphibolization. Especially the exterior parts of the pyroxene crystals are amphibolized, while the inner parts show poikilitic intergrowths with oriented amphibole crystals. Calcite is the normal material embedding the amphibole crystals, which have a max. length of about 4 cm. Chem. analyses and optical data are given which show that the pyroxene is 71% diopside, 20% hedenbergite, 9% Fe-Mn pyroxene of more complex mol. comp., with 0.75% Na<sub>2</sub>O content. The strongly pleochroic, deep-green colored amphibole is made up from 80.4% tremolite-actinolite, 19.6% complex alkali-Fe amphibole. Particularly remarkable is its TiO<sub>2</sub> content (1.5%), while the pyroxene is very low in Ti, and

also Al<sub>2</sub>O<sub>3</sub> and Fe<sub>2</sub>O<sub>3</sub> are low, but high in the amphibole (7.73 and 4.81%). The chem. reactions of the amphibolization are: (1) addn. of Mg to change diopside to tremolite mol., with a removal of CaO; (2) H, Na, K, Ti, and particularly much Al and Fe<sup>3+</sup> are introduced into the amphibole, combined with a removal of Ca<sup>2+</sup>. The ratio of Mg:Si is only slightly changed. The density of the pyroxene is 3.327, of the amphibole 3.231; the calcd. effective vol. increase during the amphibolization, however, is 12 to 13%. The Al<sub>2</sub>O<sub>3</sub> of the amphibole was derived from plagioclase of the original pegmatite, and the TiO<sub>2</sub> from ilmenite which is abundant in the original basic rocks, and here often observed changed to titanite by the metasomatic hydrothermal solns. Intense migration of alkalis, Fe, Ti, etc., in the hydrothermal phases is most characteristic for the migmatization of the basic rocks, too. The reactions indicated by the amphibolization of the original pyroxenes are therefore much more intense than is usually understood in a so-called quartz-metasomatism which is characterized by a crystn. of hydrothermal quartz, and a removal of CaO from the anorthite constituents of the plagioclase, or from garnet, which is frequently observed, under the action of CO<sub>2</sub>-contg. hydrothermal solns.

W. Eitel



LEBEDEV, V.I.

Formation processes of drusites, pyroxene-garnet amphibolites, and  
amphibolites. Trudy Len.ob-va est. 68 no.2:238-282 '51.(MLRA 9:3)  
(Rocks)

~~V.I.~~ Lebedev, VI.

G-E-R-M.

U S S R.

✓ Some comments on the work of A. S. Uklonskii on the "Geochemical classification of minerals of the earth's crust." V. I. Lebedev, *Zapiski Vsesoyuz. Mineralog. Obshchestva* 79, 72-4 (1950); *Chem. Zentr.* 1951, II, 2710.— L. criticizes the attempt of Uklonskii (cf. C.A. 48, 1205g) to supplement L.'s earlier classification of the minerals on the basis of their principal chem. elements by a geochem. classification which depends upon the distribution of the elements according to Vernadskii (cf. C.A. 21, 3330). The principal defect of U.'s classification is the disregarding of advances in crystal chemistry.

M. G. Moore

PC 61

Chemical Abst.  
Vol. 48 No. 4  
Feb. 25, 1954  
Mineralogical and Geological Chemistry

Correct and incorrect use of the crystal lattice energy concepts in geochemistry. V. I. Lebedev. *Vestnik Leningrad. Univ.* 7, No. 10, Ser. Biol., Geogr., i Geol. 197-198 (1952); cf. Tauson *C.A.* 44, 3847b. For the success law of metasynthesis of minerals in complex geochem. systems, Terzian (*Geochem.* 3, 331 (1937)) established a law that these phenomena are governed by a principle of continuously decreasing lattice energies of the cryst. phases pptd. during differentiation. Especially for silicates and sulfides, Tauson had critically discussed this law, and he came to the opposite conclusion that the tendency to continuously increased lattice energies should rule the differentiation process. L. attempts to reconcile these contradictory statements, and goes back to the definition of chem. compds. with ionic, at., and mol. binding forces (in Haber-Born cycle processes). T.'s formulation (*C.A.* 44, 3847b) of the succession law is erroneous since the assumption of purely ionic structures in silicates is obviously over-simplified. Kapustinskii's formula (*C.A.* 27, 5227) for the calcn. of the lattice energy cannot simply be used, since L. has demonstrated that in silicates only 50% of the bonds may be ionic, 50% nonionic. He gives the example of the calcn. of the lattice energies for NaCl, diamond and CO<sub>2</sub> (cryst.), first under the assumption of purely ionic bonds, and then introducing the formulas for at. and van der Waals' bonds. Enormous contradictions must result for the law of succession in these cases, if only T.'s formulations would be used. Particularly important is the problem of how the Bowen reaction principle (e.g. for the incongruent reaction of clinoenstatite in melting to form forsterite and silica) affects the succession law, as a function of lattice energies. L. uses the heats of formation of Mg and Ca silicates from the oxides (Torgeson and Sahama, *C.A.* 42, 6630f) per g. atom, and demonstrates that the lattice stability of forsterite is higher than that of clinoenstatite, but

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also the congruent character of  $\text{Ca}_2\text{SiO}_4$  and  $\text{CaSiO}_3$ ; on the other hand, he shows the higher reactivity of  $\text{Ca}_2\text{SiO}_4$  with  $\text{SiO}_2$  than that of forsterite with  $\text{SiO}_2$ . The correct use of the real bond types in the calcn. of lattice energies always confirms the F. principle of min. lattice energies as governing differentiation reactions. If K.'s formula is correctly used, it also brings out important aspects on the soly. of reciprocal salt pairs. The calcn. has given full evidence of the stability of the paragenesis of  $\text{MgCO}_3$  with  $\text{CaF}_2$ , of  $\text{MgF}_2$  with  $\text{CaSO}_4$ , while  $\text{MgF}_2$  is unstable with  $\text{CaCO}_3$ , and  $\text{CaF}_2$  unstable with  $\text{MgSO}_4$ . Stable salt pairs are those for which the sum of the heats of formation is larger than for the correlated pair of possible combination. Another important result is Shukarev's calcn. of the stability of the Fe oxides; a similar method was used by L. (C.A. 46, 10055) for the thermodynamic discussion of the stability of microcline and leucite, the incongruent fusion of grossularite, and other silicate problems.

W. Eitel

EH  
6-11-54

LEBEDEV, V.I.

Silicates

Several examples of energy analysis of processes in the formation of silicates according to the method of Prof. S.A. Shchukarev. Zap. Vses. min. ob. 81 no.2. '52

Monthly List of Russian Accessions, Library of Congress, September 1952. Unclassified.

Chemical Abst.  
Vol. 48, No. 9  
May 10, 1954  
General and Physical Chemistry

⑦ Physics  
Equilibrium brucite-periclase-water under pressure - V. I. Lebedev (Leningrad State Univ.). *Doklady Akad. Nauk S.S.S.R.* 86, 153-6 (1952). - There is an evident contradiction between the exptl. results of Bowen and Tuttle (Shornik, *Voprosy Fiz.-Khim. i Mineral. Petrog.*, 1951) on the equil. of the reaction  $Mg(OH)_2 = MgO + H_2O$ , in the range from 422 to 1055 atm., and the calcn. of the equil. consts. from Nernst's equation, given by Korzhinskii (C.A. 33, 28<sup>o</sup>), and a calcn. from thermodynamic data, by Nikolaev (with  $\Delta H_{298}^\circ = -22,200$  cal./mol.). The temp. of dehydration of brucite is increased from 430<sup>o</sup> for 1 atm. to 890<sup>o</sup> for 422 atm., whereas the same temp. is for serpentine 700<sup>o</sup> at 1 atm., 500<sup>o</sup> at 422 atm. (B. and T.). L. studied anew the dehydration temp. of brucite under a N pressure of 85 atm. in a steel bomb with inner heating device, and differential thermal equipment. The results are in good agreement with the previous data of Berg and Bassonskaya (C.A. 47, 3660h); but differ from those of B. and T. and the calcd. dissocn. curves, intersecting the curve of K. In reality, the expts. of L. give only the curve for satd.  $H_2O$  steam in contact with an inert gas, under a relatively low partial pressure, whereas B. and T.'s curve represents the equil. in contact with the decompd. brucite. The strong increase of the dehydration temp. of brucite with increasing  $H_2O$  concn. and pressure indicates the wide range in the  $p-t-x$  relations of the system  $MgO-H_2O$  with the temps. observed by B. and T. as the maxima, in which hydrothermal conditions of the brucite formation and decompn. may correspond to those in nature. The variation field is particularly wide for pressures below 1000 atm., i.e. corresponding to the conditions a few km. deep in the earth's crust.  
W. Eitel

#9/2/54

LEBEDEV, V.I.

Some observations on geochemistry as a science. Izv. ~~AN~~ SSSR. Ser. geol.  
no. 3:7-16 My-Je '53. (MLA 6:6)  
(Geochemistry)

LEZHNEV, V. I.

"Concerning the Criticism by N. A. Lantya and O. P. Tcheulov-Petrovich of the Article "Several Examples of Energy Analysis of Processes of Formation of Silicates According to the Method of Prof S. A. Shchukarev", Zap. Uzbekist. otd. Vses. mineralog. o-va, 82, No 3, pp 142-148, 1952

Taking exception to the criticism of his article, the author explains that he did not recommend the method of S. A. Shchukarev for the analysis of the processes governing the formation of silicates at high temperatures used in ceramic practice, but considers that this method is fully applicable for conditions holding true in nature, and possesses a number of advantages in comparison with the method of thermodynamic study of free energy. (RZhGeol, No 1, 1955)

Sov. No. 681, 7 Oct 55



LEVEDEV., V. I.

Chemical Abst.  
Vol. 48  
Apr. 10, 1954  
General and Physical Chemistry

The exothermic effects of kaolin. V. I. Lebedev. *Doklady Akad. Nauk S.S.S.R.* 89, 335-8 (1953); *Silikattech.* 4, 515-6 (1953).—The discussion of the exothermic effect starts from the fact that especially in Al silicates there is no purely ionic, but a highly homopolar (covalent) bonding mechanism. Al<sup>3+</sup> in kaolinite, the structural [SiO<sub>4</sub>] networks are characterized by a  $\frac{1}{2}$  homopolar binding of Si-O, whereas in the [AlO<sub>4</sub>] groups, and for Al-OH, the ionic bond type is assumed to prevail. The dehydration at 500 to 600° destroys the octahedral layers and distorts the tetrahedral layers too. One half of the Al<sup>3+</sup> ions migrate under the action of electrostatic fields to the previous positions of lost OH<sup>-</sup> groups, i.e. into the empty positions in the tetrahedral layers. The whole structure is then a highly disordered "amorphous" pseudomorph. At 880° to 900°, the atoms of the residual octahedral layers are re-grouped to form  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, and the electrostatic fields in the bonds with the tetrahedral layers are disrupted. The unstable O<sup>2-</sup> positions have a high electron affinity (236 kcal./g. atom), and a homopolar Al-O bond is new-formed, accompanied by the homopolar Si-O bonds, with the crystn. of nuclei of sillimanite and mullite. This brings about the exothermic effect. The following smaller exothermic effects are only phenomena of recrystn.:  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> disappears to form sillimanite or mullite. Similar considerations are given for the reaction of intimate mixes of Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub> in allophane, and synthetic gel mixes which form mullite by heating, and for the reaction in the solid state between CaCO<sub>3</sub> and SiO<sub>2</sub> to form 2CaO.SiO<sub>2</sub>.  
W. Eitel

ME 11-5-54

USSR.

A probable source of forces for tectonic movements in the earth's crust. V. I. Lebedev. *Doklady Akad. Nauk S.S.S.R.* 90, 217-20 (1953). In the upper parts of the earth's crust, i.e. in sedimentary rocks, and in metamorphic rocks of low rank (phyllites, schists) most of the Al is accommodated in 6-fold coordination (I) with O in minerals like micas, kaolinite, or kyanite. In high-rank metamorphic rocks (granites, gneisses), Al is mostly in 4-fold coordination (II) in feldspars, sillimanite, etc. With I the av. vol. of an O ion is calcd. to be 19.3 cu. A., with II 22 cu. A., Al in I are exposed to higher temps., e.g. by deeper burial, and accompanying vol. expansion is responsible for the trans-compressional folding. The primary energy for the alteration II  $\rightarrow$  I is mainly sun energy absorbed during alteration; for I  $\rightarrow$  II it is radioactive energy. R. Lippmann

USSR/ Geology      Energy sources

Card : 1/1      Pub. 46 - 3/16

Authors : Lebedev, V. I.

Title : About the possibility of solar energy absorption by the crystalline matter of the earth

Periodical : Izv. AN SSSR. Ser. geol. 4, 50 - 74, July - August 1954

Abstract : The problem of energy sources (especially solar radiation), which bring life into the crust of the earth, including the atmosphere (its troposphere), hydrosphere, biosphere and lithosphere, was analyzed theoretically. The effect of endo- and exogeneous forces on the magmatism, deep metamorphism, formation of geosynclinal depressions and mountains, is explained. The direct effect of solar energy on minerals and rocks of endogeneous origin, the high-energy carrying substances of biogeneous origin, and the possible absorption of solar energy, by crystalline substances of the earth, are discussed. Forty-four references: 36 USSR, 5 USA and 3 German (1912 - 1954). Tables; graphs; illustration.

Institution : ....

Submitted : August 24, 1953

LEBEDEV, V. I.  
LEBEDEV, V.I.

Concerning N.A.Landila's and O.P.Mchedlov-Petrosian's criticism of the article "Some examples of energy analysis of processes in the formation of silicates according to Professor S.A. Shchukarev's method." Zap.Vses.min.ob-va 83 no.2:167-168 '54. (MLRA 7:7)  
(Silicates)

LEBEDEV, V.I.

Some observations concerning the work of P.V.Grushvitskii. Uch.zap.  
Len.un. no.178:231-239 '54. (MIRA 8:5)  
(Crystallochemistry) (Grushvitskii, P.V.)

LEBEDEV, V. I.

LEBEDEV, V. I. --"Fundamentals of Energy Analysis of Geochemical Processes."  
\*Dissertations For Degrees In Science and Engineering Defended  
at USSR Higher Educational Institutions)(29) Leningrad State  
Order of Lenin U imeni A. A. Zhdanov, Leningrad, 1955

SO: Knizhnaya Letopis' No 29, 16 July 1955

\* For the Degree of Doctor of Geologicmineralogical Sciences

LEBEDEV, V.I.

Distribution of elements in the earth's crust and hypotheses on the origin of the earth. Min.sber.no.9:38-49 '55. (MLRA 9:9)

1.Leningrad. Gosudarstvennyy universitet imeni A.A.Zhdanov.  
(Earth) (Geochemistry)

LEBEDEV, V.I.

Processes of change in basic rocks (in relation to the problem  
of granitization). Vest.Len.un. 10 no.4:99-112 Ap '55.  
(Metasomatism) (MIRA 8:8)



USSR/ Cosmochemistry. Geochemistry. Hydrochemistry

D.

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11521

Author : Lebedev V.I.

Inst : Leningrad State University

Title : On the Origin of Carbonate-Anthophyllite-Actinolite Rocks of Cape Kartash in Northern Karelia

Orig Pub : Uch. zap. LGU, 1955, No 188, 23-58

Abstract : Presented are the results of investigations of the rarely occurring, in the White Sea area, carbonate-anthophyllite-actinolite rocks, and the specific features of their chemical composition are discussed. The rocks under study form strato-lenticular bodies within the belt of amphibolite and garnet-amphibolite gneisses and schists, magmatized to a varying extent, underlying biotite and garnet-biotite gneisses magmatized much more extensively. In mineralogical composition predominant are carbonate-anthophyllite-actinolite rocks with a high content of carbonate and varying anthophyllite to actinolite ratio. Carbonate is represented by breunerite, ankerite and dolomite. Chrompicotite and rhombic pyroxene are encountered. Subsidiary minerals: phlogopite, chlorite sulfides (mostly pyrrhotine) etc.

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USSR/ Cosmochemistry. Geochemistry. Hydrochemistry

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11521

D.

Rocks under study were produced by extensive metamorphism of ultrabasic rocks as a result of amphibolization processes, they are close to peridotites and olivinic gabbro-norites and are remote from carbonate rocks of primary sedimentation origin. Accumulation of carbonates took place as a result of circulation of hydrothermal solutions, containing CO<sub>2</sub>, under conditions precluding removal, into the enclosing rocks, of excess magnesium. Presented are chemical analyses of rocks, carbonate, anthophyllite, actinolite, and spectral analyses of actinolite, anthophyllite and spinel.

LEBEDEV, V. I.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry, D

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61311

Author: Lebedev, V. I.

Institution: None

Title: Contribution to the Mineralogy of Pyroxene-Containing Pegmatite Veins of Porozhechnaya "Varaka" [Forested Cliff]

Original

Periodical: Uch. zap LGU, 1955, No 188, 73-90

Abstract: Pegmatite veins of Porozhechnaya varaka in northern Karelia are characterized by the fact that they contain, in addition to quartz and feldspars considerable amounts of pyroxene (diopside). Enclosing rocks: gabbroanorites converted to pyroxenic amphibolites. Diopside developed mostly along casings and at contacts with xenolites. Large crystals are as a rule amphibolized in contrast with the small ones which being enclosed in granules of quartz and feldspars have retained their original appearance. In the process of amphibolization the diopside has been replaced by common

Card 1/2

Name: LESEDEV, Vasilii Il'ich

Dissertation: Principles of power engineering  
analysis of geochemical processes

Degree: Doc Geol-Min Sci

Affiliation: [not indicated]

Defense Date, Place: 31 Oct 55, Council of Leningrad Order  
of Lenin State U imeni Zhdanov

Certification Date: 26 May 56

Source: BMVO 4/57

LEBEDEV, V. I.

Processes involved during heating known  
Vasilch Leningrad  
No. 4, 24.06.58  
Institute of Chemistry  
Leningrad  
Leningrad  
It represents a  
history but not a  
Leningrad

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in a well of, etc., according, simultaneous proximity begins. Later  
it is converted into malite. But in the formation of  
silica the molecule  
of the  
are described

RAM

LEBEDEV, V.I.

More on the possibility of solar energy absorption by crystalline matter of the earth. Izv.AN SSSR.Ser.geol. 21 no.8:91-100 Ag '56.

1. Leningradskiy gosudarstvennyy universitet.  
(Solar radiation) (Absorption)

PHASE I BOOK EXPLOITATION

632

Lebedev, Vasilii Il'ich

Osnovy energeticheskogo analiza geokhimicheskikh protsessov (Principles of Analyzing the Energy in Geochemical Processes) Leningrad, Izd-vo Leningradskogo univ-ta, 1957, 341 p. 2,500 copies printed.

Sponsoring Agency: Leningrad Universitet.

Ed.: Kelarev, L.A. Tech. Ed.: Vodolagina, S.D.

PURPOSE: The book is intended for specialists in geochemistry, mineralogy and petrography and for graduate students taking courses in geochemistry.

COVERAGE: The book consists of two parts: Part I: "Physical and Chemical Principles of Geochemistry" and Part II: "Use of Principles of Geochemistry for Solving Some Geological and Mineralogical Problems." Some recent achievements in chemistry and physics are applied to the field of geochemistry. General problems in geochemistry are discussed, such as why some elements combine with oxygen and others with sulfur, the reason for the formation of complex compounds, etc. Migration of elements and energy sources of these processes are also discussed. The author

Card 1/8

Principles of Analyzing the Energy (Cont.) 632

thanks Academician N.V. Belov, Professor S.M. Kurbatov, Professor I.I. Shafranovskiy, Professor L.V. Komlev, Professor V.V. Shcherbina, and Docent S.M. Ariya for editing his book. V.N. Danilkina and A.V. Kryuko aided him in preparing the manuscript. There are 287 references of which 246 are Soviet, 28 English, 11 German, 1 Italian, and 1 Polish.

TABLE OF CONTENTS:

Foreword	3
Introduction	7

SECTION I. PHYSICAL AND CHEMICAL FUNDAMENTALS OF GEOCHEMISTRY

Ch. I. Basic Laws of Atomic Structure and the Occurrence of Chemical Elements in the Earth's Crust	23
General remarks	23
Structure of the atom	24
Structure of the nucleus	25
Basic rules regarding the occurrence of chemical elements in the earth's crust	31
Card 2/8	



Principles of Analyzing the Energy (Cont.) 632

a) General laws regarding the occurrence of elements	31
b) Occurrence of elements with atomic numbers 4,43,61,85,87, and some other elements	43
c) Special features of the isotope composition of elements in the earth's crust and the significance of studying the occurrence of isotopes	45
Ch. II. Structure of Electron Shells in Atoms and Theory of the Chemical Bond	50
Introductory remarks	50
Structure of electron shells in atoms	52
a) Basic principles of N. Bohr's theory	52
b) Distribution of electrons in the shells of various atoms	60
Theory of the chemical bond	64
a) Hypotheses of Kossel and Lewis regarding chemical combination of atoms	64
b) Quantum-mechanical theories concerning the state of electrons in atoms	68
c) Nature of chemical forces, formation of chemical bond between atoms	77
Atomic bond	77
Ionic bond	81
d) Chemical bond in complex compounds	85
Donor-acceptor bond	93
Atomic-metallic bond	95
e) General conclusions concerning the formation of various types of bonds between atoms	97

Card 3/8

Principles of Analyzing the Energy (Cont.) 632

Ch. III. Fundamental Assumptions on the State of Matter of the Earth's Crust	107
Fundamental principles of modern crystal chemistry	107
a) Origin and development of fundamental concepts of crystal chemistry	107
b) Examples of non-compliance of the structure of crystalline compounds with the ratio of ionic radii	114
c) Polarization hypotheses	116
d) First law of crystal chemistry and its inadequacy	121
Basic rules of combination of atoms in solid, liquid, and gaseous states	126
State of matter in solution	131
Energy of hydration	142
Maximum packing law and its utilization in geochemistry	150
Ch. IV. Methods of Calculating Energy Effects in the Formation of Crystalline Compounds	156
Concepts of the crystalline lattice energy and methods of determining it	157
Utilizing concepts of the heats of formation of compounds	168
S.A. Shchukarev's method of utilizing heats of formation	169
Ch. V. Basic Thermodynamic and Thermochemical Laws in Geochemical Processes, Particularly in the Crystallization Processes	176

Card 4/8

Principles of Analyzing the Energy (Cont.) 632

Introductory remarks	176
First and second laws of thermodynamics	177
Principle of free energy and the thermodynamic potentials	179
Qualitative expressions of thermodynamic laws -- the Le Chatelier principle, the phase rule	182
Concept of energy levels and the Hess-Fersman paragenetic law	191
General description of directed energy in geochemical processes and the laws of successive crystallization	195

SECTION II. APPLICATION OF GEOCHEMISTRY PRINCIPLES  
TO THE SOLUTION OF SOME GEOLOGICAL-MINERALOGICAL  
PROBLEMS

Ch. VI. Factors Causing Some Elements to Form Compounds With Oxygen and Others With Sulfur. Natural State.	205
Status of the problem	205
Proposed solution	207
a) Properties of elements combining with oxygen or sulfur, and those remaining in natural state	208
b) Properties of oxygen, sulfur, and tellurium	211

Card 5/8

Principles of Analyzing the Energy (Cont.) 632

c) Rules depending on differences in chemical bond properties and on packing of the atoms	212
d) Conclusions and study of actual associations of elements	214
Ch. VII. Some Rules of Formation of Complex Compounds (Silicates, Carbonates, Sulfides, and Some Other Compounds)	222
Rules of formation of oxygen compounds	222
a) Significance of oxygen and of its properties	222
b) Properties of silicon and other elements	223
c) Regularities in the composition and structure of silicates and some other oxygen compounds	227
Regularities of formation of sulfur compounds	237
Ch. VIII. Basic Principles of Isomorphism (Phenomena Leading to Complex Structure of Natural Compounds)	240
General remarks	-
Isomorphism	241
Isovalent isomorphism	248
Heterovalent isomorphism	250
Polar isomorphism	252

Card 6/8

Principles of Analyzing the Energy (Cont.) 632

Compensatory isomorphism	255
Isomorphism as the result of similarity of energy values for the lattices of compounds	255
Isomorphism of compounds with an atomic bond	258
Dependence of isomorphism on the nature of bonds	260
Use of "geochemical stars" (of A.Ye. Fersman) and diagrams of effective ionic radii in solving problems of isomorphism	264
Ch. IX. Problem of Migration of Elements in the Earth's Crust	267
General remarks	267
Occurrence of elements in various parts of the earth's crust	271
Factors determining migration phenomena	273
Regularities in crystallization processes	283
a) Survey of the existing theories	283
b) Bowen reaction series and its energy basis	288
c) Analysis of the successive crystallization of silicates by S.A. Shchukarev's method	292
Behavior of rare and sparsely distributed elements during crystallization	299
Recrystallization processes	302
Some regularities of migration of alkali metals and alkaline earths in hypergenic processes	306

Card 7/8

Principles of Analyzing the Energy (Cont.)	632
a) Conditions characterizing hypergenic processes	306
b) Characteristics of the composition and structure of compounds formed under hypergenetic conditions	307
c) Regularities in the phenomena of absorption and ion exchange by colloids, and the hydration energy	309
d) Regularities of migration and differentiation in alkali metals and alkaline earths	310
Ch. X. Energy Sources of Geochemical Processes	
General remarks	315
Gravitation, cosmic, and atomic energies	315
Possibility of accumulation of solar energy in crystalline matter of the Earth	316
Summary	319
Appendix I	327
Appendix 2	330
Bibliography	331
AVAILABLE: Library of Congress	332

Card 8/8

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LEBEDEV, V.I.; BELOV, N.V.

Concerning O.P.Mchedlov-Petrosian's critique of the hypothesis  
of the accumulation of solar energy by crystalline substance.  
Min.sbor. no.11:371-374 '571 (MIRA 13:2)

1. Institut kristallografii AN SSSR, Moskva.  
(Solar energy)

LEBDEV, V.I.

Factors stipulating the migration of the alkalies and alkali earth elements in the zone of hypergenesis [with summary in English].  
Geokhimiia AN SSSR no.6:508-517 '57. (MIRA 11:2)

1. Leningradskiy gosudarstvennyy universitet.  
(Alkalies) (Ions--Migration)



BELOV, N.V., akademik; LEBEDEV, V.I., doktor geologo-mineralogicheskikh nauk.

Energy sources of geochemical processes. Priroda 46 no.5:11-20 My  
'57. (MLBA 10:6)

1. Institut kristallografii Akademii nauk SSSR (Moskva) (for Belov).
2. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova (for Lebedev).

(Geochemistry)

(Thermochemistry)

LEBEDEV, V.I.

Genesis of graphic texture in pegmatites. Uch.zap.LGU  
no.215:49-57 '57. (MIRA 12:5)  
(Pegmatites)

LEBEDEV, V.I.

FERSMAN, Aleksandr Yevgen'yevich, akademik; SHCHERBAKOV, D.I., akademik, otvetstvennyy red.; KAPUSTINSKIY, A.F., red.; LEBEDEV, V.I., doktor geol.-min.nauk, red.; SAUKOV, A.A., red.; SHCHERBINA, V.V., doktor geol.-min.nauk, red.; KUN, N.R., red. izd-va; MOSKVICHEVA, N.I., tekhn. red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad. nauk SSSR. Vol. 4. 1958. 588 p.  
(MIRA 11:4)

1. Chlen-korrespondent AN SSSR (for Kapustinskiy, Saukov)  
(Geochemistry)

LEBEDEV, V. I.

"Results of Studies of Kaolin and Brucite Under Pressure by Means of Thermal Curves" p. 129

~~"Synthesis and Structure of Hydrosilicates containing Simple and Complex Heavy Metal Cations" p. 28~~

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

LEBEDEV, V.I.

Basic factors determining the adsorption and exchange of ions in  
soil. Pochvovedenie no. 6:21-28 Je '58. (MIRA 11:7)  
(Soils--Analysis)  
(Ion exchange)

3(5)

**AUTHORS:**

Gerasimovskiy, V. I., Lebedev, V. I. SOV/7-58-6-5/16

**TITLE:**

On the Strontium - Calcium Ratio in Rocks of the Lovozerskiy Massif (O sootnoshenii strontsiya i kal'tsiya v porodakh Lovozerskogo massiva)

**PERIODICAL:**

Geokhimiya, 1958, Nr 6, pp 553 - 557 (USSR)

**ABSTRACT:**

The authors investigated the nepheline syenites of the Lovozerskiy Massif (Kol'skiy poluostrov). The Sr and Ca content was flame photometrically determined (oxyacetylene torch, double glass monochromator, photo multiplier PM-17, rectifier 4A3-1). The massif was intrusively formed in several phases and consists of the following rocks: 1. Complex of porphyritic, poecilitic and other nepheline syenites; 2. Complex of lujavrites, foyaites and urtites; 3. Complex of eudialyte bearing lujavrites and porphyritic lujavrites which are in connection with the former mentioned, tavites (tavity) and poecilitic sodalite syenites; 4. Complex of young dike rocks. Rocks of the three first mentioned complexes were investigated (Table 2). Their content is between 0.008 and 1.75% SrO and 0.03 and 11.0% CaO. There is no direct connection

Card 1/3

On the Strontium - Calcium Ratio in Rocks of the  
Lovozerkiy Massif

SOV/7-58-6-5/16

although they have some maxima and minima in common (Diagram). Apart from Ca Sr is also substituted for K. Furthermore, Sr is genetically related with Na (Table 3). The most important minerals are: Lamprophyllite, belovite, apatite, nordite, loparite, eudialyte, erikite, diaschistic rock, microcline (analyzed by V. A. Moleva), lovocerite. Investigations showed the following facts: Nepheline syenites of the Lovozerkiy Massif have a comparatively high Sr/Ca ratio. (0.033 to 0.541). Poecilitic sodalite syenites do not belong to the same intrusion phase as poecilitic nepheline syenites, as it was frequently assumed. The strontium content of miaskite rocks (first complex) is higher than that of agpaitic rocks (second and third complex). There are 1 figure, 3 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION:

Card 2/3

Institut geokhimii i analiticheskoy khimii im. V.I.  
Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and  
Analytical Chemistry imeni V.I. Vernadskiy, AS USSR, Moscow)

Le. B. & D. v. V. J.

[illegible]



3(8), 3(0)

SOV/7-59-1-7/14

AUTHORS: Gerasimovskiy, V. I., Lebedev, V. I.

TITLE: On the Distribution of Rubidium and Lithium in the Rocks of the Lovozerskiy Massif (O rasprostraneni rubidiya i litiya v porodakh Lovozerskogo massiva)

PERIODICAL: Geokhimiya, 1959, Nr 1, pp 60-63 (USSR)

ABSTRACT: The distribution of rubidium and lithium in the nepheline syenites of the Lovozerskiy Massif (Kola Peninsula) was investigated. This intrusion consists of 4 stages containing the following rocks: 1) Evenly grained, porphyritic, poikilitic, and other varieties of nepheline syenite. 2) Lujavrites, foyaites, and urtites. 3) Eudialitic lujavrites, in connection with porphyritic lujavrites, tawites, and poikilitic sodalite syenites. 4) Complex of dike-rocks of recent formation. From the first complex (miaskitic) 4 samples, from the second complex (agpaitic) 16 samples, and from the third complex (also agpaitic) 9 samples were investigated.  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{Li}_2\text{O}$  and  $\text{Rb}_2\text{O}$  contents were analyzed (Table). Lithium and rubidium were photometrically determined. The amounts vary greatly,  $\text{Rb}_2\text{O}$  between 0.0014 and 0.045%, and  $\text{Li}_2\text{O}$  between 0.0004 and

Card 1/2

SOV/7-59-1-7/14

On the Distribution of Rubidium and Lithium in the Rocks of the Lovozerskiy Massif

0.0320%. This may be explained by the great variations in the minerals occurring. There is no direct relation between the rubidium and potassium contents or between the lithium and magnesium contents. Rubidium and lithium were accumulated towards the end of the magmatic development in the rocks of the third stage. Lithium appears as characteristic element of the Lovozerskiy Massif. There are 1 table and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo  
AN SSSR, Moskva  
(Institute of Geochemistry and Analytical Chemistry imeni  
V. I. Vernadskiy, AS USSR, Moscow)

SUBMITTED: July 29, 1958

Card 2/2

3(5), 3(8)

AUTHOR:

Lebedev, V. I.

SOV/7-59-6-1/17

TITLE:

On the Rules of Isomorphism. 1. Distribution of Mg, Fe, Mn, Ca, Sr, Ba, Li, K, Rb, and Several Other Elements in Minerals Which Are Connected With Processes of Magma Crystallization

PERIODICAL:

Geokhimiya, 1959, Nr 6, pp 483 - 494 (USSR)

ABSTRACT:

Considering energy conditions the author found (Ref 8) a law of isomorphism basing on rules established by A. Ye. Fersman (Ref 14) and others (Ref 15), and which may be briefly explained in the following way: at higher temperature the ion strengthening the lattice structure and thus increasing energy enters the lattice; at lower temperatures also ions of lower valence, lower ionization potential etc are admitted which reduce lattice energy. The present paper shows this rule on the basis of the experimental results of other authors. A diagram is given (Fig 1) from the papers by H. Ramberg and G. De-Vore (Refs 16, 17) on the distribution of Mg and Fe in coexisting olivines and orthopyroxenes. The characteristic feature of the rule mentioned is the fact that at high magnesium contents of the melt the olivine crystallizing first contains more magnesium than pyroxene which crystallizes later. This may be proved by

Card 1/2

On the Rules of Isomorphism. 1. Distribution of SOV/7-59-6-1/17  
Mg, Fe, Mn, Ca, Sr, Ba, Li, K, Rb, and Several Other Elements in Minerals  
Which Are Connected With Processes of Magma Crystallization

comparing the energies of formation. Further the paper by S. R. Nockolds and R. L. Mitchell (Ref 10) is mentioned dealing with the distribution of gallium, chromium, vanadium, molybdenum, lithium, nickel, cobalt, scandium, lead, manganese, yttrium, lanthanum, strontium, barium, and rubidium in the various minerals of the Caledonian deep-seated rock of western Scotland (Fig 2). The behavior of the individual elements is discussed. L. V. Tauson drew the exactly opposite conclusion herefrom, i.e. isomorphism in earlier generations will be the higher the lower the energy of formation is as a result of the entrance of the isomorphous element (Ref 12). The author proves that this conclusion could only hold if oxygen, silicon, and aluminum occurred purely as ions, i.e. as  $O^{2-}$ ,  $Si^{4+}$ , and  $Al^{3+}$ . The papers by N. V. Belov and A. G. Betekhtin are mentioned. There are 2 figures and 21 references, 11 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)  
SUBMITTED: January 21, 1959  
Card 2/2

5(2)

AUTHOR:

Lebedev, V. I.

SOV/75-14-3-4/29

TITLE:

Determination of Alkali and Alkaline-Earth Elements  
in Silicate Rocks by Means of Flame Spectrophotometry  
(Opredeleniye shchelochnykh i shchelochnozemel'nykh  
elementov v silikatnykh porodakh metodom spektrofotometrii  
plameni)

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 3,  
pp 283-287 (USSR)

ABSTRACT:

For the determination of alkali- and alkaline-earth elements  
in granites, syenites, gneiss, microcline etc. a  
spectrophotometer was constructed. The optic system consists  
of a double glass monochromator "DM", the photoelectrical  
device of the photomultipliers FEU-17 (for the visible spectrum)  
and FEU-22 (for the red and infrared spectrum range), the  
rectifier VVS-1 and the mirror galvanometer M-21. The spectral  
lines Li - 670.7 mμ, K - 766.5 mμ, Na - 588.9 mμ, Rb - 780.0 mμ,  
Ca - 549.8 mμ, Sr - 460.7 mμ were determined. The mineral to  
be analyzed was decomposed by hydrogen fluoride, or chloric  
acid. In the presence of aluminum the dried perchlorates  
were annealed and the alkali- and alkaline-earth compounds

Card 1/2

Determination of Alkali and Alkaline-Earth Elements  
in Silicate Rocks by Means of Flame Spectrophotometry

SOV/75-14-3-4/29

removed by 2-n hydrochloric acid, the aluminum precipitated with ammonia. (Table 1 gives the results obtained by this method at contemporary presence of Al and Sr). Tables 2 and 3 present the results of the analyses, table 4 gives a comparison with the values found according to other methods. The errors in measurement do not exceed 5 - 6 %. The method is applicable to minerals containing at least 0.001 % of alkali- and alkaline-earth elements. There are 1 figure, 5 tables, and 18 references, 3 of which are Soviet.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences, USSR, Moscow)

SUBMITTED: April 1, 1958

Card 2/2

KAZAKEVICH, T.A.; LEBEDEV, V.I.

Seminar on philosophy of teachers of the faculty of geology.  
Vest.LGU 14 no.6:160-161 '59. (MIRA 12:6)  
(Philosophy) (Geology)

LEBEDEV, V.I.

Results of the study of garnets from metamorphized basic rocks  
and gneisses in the White Sea region. Vest.LGU 14 no.18:5-20  
'59. (MIRA 12:8)  
(White Sea region--Garnet) (White Sea region--Gneiss)



LEBEDEV, V.I.

Causes of uranium oxidation in uraninites. Zap. Vses. min. ob-va  
88 no.6:667-671 '59. (MIRA 13:8)

1. Leningradskiy universitet.  
(Uranium) (Oxidation)

ZLOBIN, B.I.; LEBEDEV, V.I.

Geochemical relations of Li, Na, K, Rb, and Tl in alkaline magmas  
and their petrogenetic significance. *Geokhimiia* no.2:87-103 '60.  
(MIRA 13:6)

1. Vernadsky Institut of Geochemistry and Analytical Chemistry,  
Academy of Sciences, U.S.S.R., Moscow.

(Sandyk, Mount (Kirghizistan)--Rocks, Igneous)  
(Alkali metals)  
(Thallium)

GERASIMOVSKIY, V. I.; LEBEDEV, V. I.

Cesium concentration in rocks of the Lovozero massif. Geokhimiia  
no. 6:545-546 '60. (MIRA 13:10)

1. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo  
AN SSSR, Moskva. (Lovozero tundras--Cesium)

LEBEDEV, V. I.

Boron isomorphism in silicates. Geokhimiia no. 6:547-551 '60.  
(MIRA 13:10)

(Boron) (Silicates) (Isomorphism)

SHIROKOV, A.A.; LEBEDEV, V.I.; KOVALEV, K.G.

Experimental and practical work in interpreting aerial color  
photographs. Geod. i kart. no. 11:34-35 N '60. (MIRA 13:12)  
(Photographic interpretation)

LEBEDEV, V.I.

A.E. Fersman's geoenery theory and its development during the last  
twenty-five years. Vest. LGU 15 no.6:5-19 '60. (MIRA 13:3)  
(Geochemistry)

LEBEDEV, V.I.

Effect of the character of chemical links on the isomorphism of boron in silicates and its behavior in igneous and other processes of crystallization. Vest. LGU 15 no.24:28-39 '60.

(MIRA 13:12)

(Boron)

(Crystallization)

LEBEDEV, V.I.

Book of great importance ("Chemical evolution of the earth" by  
A.P.Vinogradov. Reviewed by V.I.Lebedev). Vest. LGU 15 no.24:  
146-148 '60. (MIRA 13:12)  
(Geochemistry) (Vinogradov, A.P.)



KAZAKEVICH, T.A.; LEBEDEV, V.I.

Philosophy conference of teachers of the faculty of geology. Vest.  
LGU 15 no.24:152-153 '60. (MIRA 13:12)  
(Geology)

NIKIFOROV, V.P.; TSYPLAKOV, A.M.; ~~LEBEDEV, V.I.~~

Selecting the number and the design of anodic pins for aluminum electrolytic cells with current fed from on top. TSvet. met. 33  
no.10:56-62 O '60. (MIRA 13:10)

1. Vsesoyuznyy alyuminiyevo-magniyevyy institut.  
(Aluminum--Electrometallurgy)

ALIMARIN, I.P.; BILIMOVICH, G.N.; BUSEV, A.I.; VAYNSHTEYN, E.Ye.; VOLYNETS,  
M.P.; GORYUSHINA, V.G.; DYMOV, A.M.; YELINSON, S.V.; ZVIAGINTSEV,  
O.Ye.; KOLOSOVA, G.M.; KORCHEMNAYA, Ye.K.; ~~LEBEDEV, V.I.~~; MALOFEYeva,  
G.A.; MELENT'YEV, B.N.; NAZARENKO, V.A.; NAZARENKO, I.I.; PETROVA, T.V.;  
POLUEKTOV, N.S.; PONOMAREV, A.I.; RYABUKHIN, V.A.; STROGANOVA, N.S.;  
CHERNIKHOV, Yu.A.; VINOGRADOV, A.P., akademik, otv. red.; RYABCHIKOV,  
D.I., doktor khim. nauk, prof., otv. red.; GUS'KOVA, O., tekhn. red.

[Methods for the determination and analysis of rare elements] Metody  
opredeleniia i analiza redkikh elementov. Moskva, 1961. 667 p.  
(MIRA 14:7)

1. Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii.  
(Metals, Rare and minor)

VAYNSHTEYN, E. Ye.; LEBEDEV, V.I.

Recent determinations of Li, Na, K, Rb, Cs, Ca, and Sr in the standards W-1 and G-1 by flame photometry. Geokhimiia no.4:362-363 '61. (MIRA 14:5)

1. Institut geokhimii i analiticheskoy khimii imeni V. I. Vernadskogo AN SSSR, Moskva.  
(Metals—Spectra)

LEBEDEV, V.I.

"Peculiarities of the geochemistry of scandium and the types of its deposits" by V. V. Shcherbina. Reviewed by V. I. Lebedev.  
Geokhimiia no.4:365 '61. (MIRA 14:5)

(Scandium)  
(Geochemistry)  
(Shcherbina, V.V.)

LEBEDEV, V. I.

S/122/61/000/011/016/006  
D221/D301

AUTHOR: None given

TITLE: Dissertations

PERIODICAL: Vestnik mashinostroyeniya, no. 11, 1961, 91

TEXT: The following dissertation was presented for the degree of Doctor of Technical Sciences: G. D. Ananov, of the Leningrad Polytechnical Institute imeni M. I. Kalinina (Leningrad Polytechnical Institute imeni M. I. Kalinina) "The kinematics of three-dimensional linkage mechanisms". For the degree of Candidate of Technical Sciences: V. N. Kedrinskiy, of the Moskovskiy Starko-instrumental'nyy institut im. I. V. Stalina (Moscow Machine Tool and Tool Institute imeni I. V. Stalin) "The investigation of methods of cutting bevel gears and practical means for realizing these methods". V. I. Lebedev, of the Rzhskiy Politekhnikeskii institut (Riga Polytechnical Institute) "The constructional damping in flanged joints of the friction clutch type". Chang Sung Lee, of

Card 1/3

Dissertations

S/122/51/000/011/006/006  
D221/D301

the Leningrad Polytechnical Institute imeni M. I. Kalinin. "The investigation of vibrations due to planing". Fun Tseh Sun, of the Leningrad Polytechnical Institute im. M. I. Kalinin. "Investigating the damping of vibrations by hydraulic vibration dampers". Yu. I. Cherednichenko, of the Moskovskiy avtomekhanicheskiy institut (Moscow Auto-Mechanical Institute) "The investigation of the characteristics of hydraulic torque converters and working conditions of the latter with an automobile engine". Liu Nyn Hung of the Leningrad Polytechnical Institute imeni M. I. Kalinin. "The investigation of transient processes in hydraulic tracer systems with valves used in metal cutting machine tools". O. P. Mikhaylov, of the Vsesoyuznyy zaochnyy politekhnicheskiy institut (All-Union Correspondence Polytechnical Institute) "The methods of investigating loading of machine tools in production conditions". E. S. Fal'kevich of the Dnepropetrovskiy ordena Trudovogo Krasnogo Znameni metallurgicheskiy institut im. I. V. Stalina (Dnepropetrovskiy Order of the Red Banner of Labor Metallurgical Institute imeni I. V. Stalina) "The investigation

Card 2/3

Dissertations

S/122/61/000/011-000/016  
D221/D301

of increased hardness of sheet steel". The work established that the content of carbon and manganese within the limits of the steel (0.04%), category, as well as changes of cementite from mark 1 to 3 do not affect the hardness of sheets. Content of nitrogen in aluminum deoxidized steel has a marked effect on hardness. Mechanical ageing has a similar action. The correct choice of technology of recrystallization annealing ensures a lower hardness when the content of nitrogen is decreased. The author proposes the imprint method of Eriksen for sheet testing. For the degree of Candidate of Economical Sciences: A. V. Akhmedov, of the Moscow Engineering and Economics Institute imeni S. Ordzhonikidze (Moscow Centralization of overhaul and modernization of metal cutting equipment".

Card 3/3



LEBEDEV, V.I.; VAYNSHTEYN, E. Ye.

Increasing the sensitivity of the determination of elements in  
a flame. Zhur.anal.khim. 16no.2:124-128 Mr-Apr '61. (MIRA 14:5)

1. Vernadskiy Institute of Geochemistry and Analytical Chemistry,  
Academy of Sciences, U.S.S.R., Moscow.  
(Flame photometry)

E/075/61/016/003/001, 0 7  
B106/B208

AUTHOR: Lebedev, V. I.

TITLE: Cesium determination in rocks by flame spectrophotometry

PERIODICAL: Zhurnal analiticheskoy khimii, v. 16, no. 3, 1961, 272-274

TEXT: Since the method of flame photometric determination of  $10^{-2}$  -  $10^{-3}$  % cesium in minerals, described by Ye. A. Fabrikova (Ref. 4: Fabrikova Ye. A. Zh. analit.khimii 14, 41 (1959)), is not applicable to the determination of  $10^{-4}$  % Cs in rock samples, the author used for such determinations a method previously devised by him (Ref. 5: Lebedev V. I., Zh. analit. khimii 14, 283 (1959); Ref. 6: Gerasimovskiy V. I., Lebedev V. I., Geokhimiya No.1, 60 (1959)) for the determination of rubidium. The measuring device consisted of an air-acetylene burner, a monochromator, and a photomultiplier (Ref. 5). Potassium and rubidium considerably increase the emission of cesium. At comparatively high potassium and rubidium contents ( $K/Cs \geq 1500-2000$ ), however, a practically constant emission of cesium takes place. As the concentration ratio  $K/Cs$  in rocks usually exceeds by far the given value, the cesium determination may be

Card 1/7

S/075/61/016/003/001/007  
B106/B208

Cesium determination ...

carried out without preceding addition of potassium salts. High amounts of potassium and rubidium, however, cause an intense background in the determination, which is more intense than the emission of cesium even in the case of small slit widths of the monochromator. The background has, therefore, to be measured with particular accuracy, especially when using monochromators of low dispersion. The measurements were made in three points of the cesium-free standard specimens, and the value of the background was calculated from the ratios

$$I_{H_1}^0/I_{H_\lambda}^0 = I_{H_1}^x/I_{H_\lambda}^x \text{ and } I_{H_2}^0/I_{H_\lambda}^0 = I_{H_2}^x/I_{H_\lambda}^x$$

(Fig.2). In some determinations, an MCT-51 (ISP-51) spectrograph was used instead of the monochromator. In this case, the background value was considerably lower and could be calculated as the arithmetic mean of two measurements on both sides of the analytical line. To determine the cesium content, 1 g of the finely pulverized siliceous rock specimen was wetted with distilled water in a platinum dish, and then carefully fumed off with 20-25 ml hydrofluoric acid and 1 ml sulfuric acid. By further evaporation, the fluorides are completely removed, one wets again with

Card 2/7

S/075/61/016/003/001/007  
B106/B208

Cesium determination...

water and evaporates to dryness. The dry residue is heated to slight red heat for 1-2 min over a gas flame, with iron, aluminum, and part of magnesium and calcium passing into the oxides. The cold residue is mixed with 50-70 ml water, 0.5 g ammonium carbonate, and 1-2 drops of concentrated ammonia solution, and made up with water to 100 ml in a measuring flask. The content of the flask is filtered after 30-40 min. An aliquot of the filtrate is fumed off with nitric acid to remove the ammonium salts. The residue which contains the alkali salts is dissolved in some water, and mixed with methanol or ethanol to a concentration of 40 %. Thus, the evaporation rate of the solution in the flame and, as a result, the accuracy of the determination are increased, the latter to the 2-2.5 fold. Prior to the cesium determination, the contents of sodium, potassium and rubidium are measured. The specimens are then divided into three groups with <1 %, 1-4 % and 4-10 % potassium according to their contents of potassium and rubidium (the potassium content being of major importance). Standard specimens with about the same contents of sodium, potassium, rubidium and alcohol, and with the following cesium contents are prepared for each of these groups: 0.0; 0.1; 0.2; 0.5; 1.0; 1.5; 2.0; 3.0  $\gamma$ /ml. The flame-photometric cesium determination was made on the basis of the line Cs 852 m $\mu$ . The completeness of cesium

Card 3/7

Cesium determination...

S/075/61/016/003/001/007  
B106/B208

separation by the method described was checked by means of the radioisotope  $\text{Cs}^{137}$ . Cesium losses do not exceed 5 %. Accuracy and reproducibility of the method described were tested on synthetic solutions which had been prepared from pure potassium, rubidium, and cesium salts (Table 2); besides, several determinations were carried out on the standard specimen G-1 and on some other specimens (Table 3). The above method was used for cesium determination in silicates and for the determination of  $1 \cdot 10^{-4}$  -  $7 \cdot 10^{-4}$  % rubidium in stony meteorites. There are 2 figures, 3 tables, and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. The two references to English-language publications read as follows: Liebenberg C. I., *Geochim. et Cosmochim. Acta* 10, 196 (1956); Ahrens L. H. *Quantitative Spectrochemical Analysis of Silicates*, Pergamon Press, London, 1954.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im.  
V. I. Vernadskogo AN SSSR, Moskva (Institute of Geochemistry  
and Analytical Chemistry imeni V. I. Vernadskiy AS USSR,  
Moscow)

SUBMITTED: September 28, 1959

Card 4/7

LEBEDEV, V. I.

Certain little known laws in the periodic system of elements, and their importance for mineralogy and geochemistry. Analele geol geogr 15 no.4:29-41 O-D '61.

(Mineralogy) (Geochemistry)

VAYNSHTEYN, E.Ye.; LEBEDEV, V.I.

Effect of some organic substances on calcium radiation  
in a flame in the presence of aluminum. Zhur.anal.khim. 16  
no.6:670-673 N-D '61. (MIRA 14:12)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry,  
Academy of Sciences U.S.S.R., Moscow  
(Calcium--Spectra)  
(Aluminum compounds)

LEBEDEV, V.I.

A cause of scandium concentration. Vestn. LGU 16 no.24:137-139  
'61. (MIRA 14:12)

(Scandium)



LEBEDEV, V.I.

Geochemical conference in Hungary. Trudy Len. ob-va est. 72  
no.1:61-63 '61. (MIRA 15:3)  
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LEBEDEV, V.I.

Insufficiently known features of the periodic law of elements  
and their significance for mineralogy and geochemistry. Zap.  
Vses.min.ob-va 89 no.6:640-651 '61. (MIRA 15:5)

1. Leningradskiy gosudarstvennyy universitet, Institut zemnoy  
kory. (Mineralogy) (Geochemistry) (Periodic law)

LEBEDEV, V.I.

Agpaite characteristics and their significance. Uch.zap. LGU no.312:  
234-239 '62. (MIRA 15:6)  
(Agpaite)

LEBEDEV, V.I.

"Plus"- and "minus" minerals from the viewpoint of the volume law  
and principles of chapter two of silicate crystallochemistry;  
role of pressure and chemical binding energy in transformations  
of the crustal mineralogical composition. Vest.LGU 17 no.6:  
36-46 '62. (MIRA 15:4)

(Earth--Surface) (Minerals)

PUGACHEV, Aleksandr Sergeyevich; LEBEDEV, V.I., inzh., retsenzent;  
NESTEROV, P.A., inzh., retsenzent; KORKIN, F.S., dotsent, nauchnyy  
red.; SOSIPATROV, O.A., red.; KONTOROVICH, A.I., tekhn. red.

[Developed area of sheet structure elements] Razvertki elementov  
listovykh konstruksii. Izd. 2., perer. i dop., Leningrad,  
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(Sheet—Metal work) (Shipfitting)

LEBEDEV, V.I.

"Law of volumes" in petrography; based on F.IU. Loewinson-  
Lessing's works from the viewpoint of the theory of geoenergy.  
Vop. magm. i metam. 1:92-107 '63. (MIRA 16:8)

(Petrology)

V. I. LEBEDEV (USSR)

"On the significance of high pressure in metamorphic processes."

Report presented at the Conference on Chemistry of the Earth's Crust,  
Moscow, 14-19 Mar 63.

KUZNETSOV, S.S.; LEBEDEV, V.I.; SINITSYN, V.M.

The most important scientific problem. Vest.LGU 18 no.6:8-11  
'63. (MIRA 16:4)

(Geology)



LOBEDEV, V.I.

Garnate and boudines of the Ladoga rock formation and their petrolo-  
gical significance. Vop.magt. i ne tan. 2010. 2005 '61. (MIRA 1843)

LEBEDEV, V. I.

Thermal current, metamorphism and the possible mechanism of the  
formation of geosynclines. Vestnik 19 no. 6:31-35 '64.

✓(MIRA 17:5)

LEBEDEV, V.I.; NAGAYTSEV, Yu.V.; FOTOTSKAYA, V.Ye.; PRUDNIKOV, Ye.D.;  
SHAPKINA, Yu.S.; YURCVA, G.M.

Materials on the study of the mineralogy of metamorphic rocks  
in the northwestern part of the Lake Ladoga region. Min. i  
geokhim. no.1:131-156 '64. (MIRA 18:9)

IMBEDIV, V.I.

Conference devoted to the problems of using underground waters for  
fertilization. Vest. 100 20 no.18 '65 Seriya geologii i geografii  
no.3:153-155 (DIFA 18:10)

LEBEDEV, V.I.

Some general problems of isomorphism. Zap. Vses.min.ob-vi:  
93 no. 2:126-138 '64. (MIRA 17:6)

1. Institut zemnoy kory pri Leningradskom universitete.

LEBEDEV, V.I., prof., otv. red.; MORACHEVSKIY, A.G., dots., otv. red.; PROKHOROVA, M.I., prof., otv. red.; TRUTNEV, A.G., prof., otv. red.; POZDYSHEVA, V.A., red.; PETROVICHEVA, O.L., red.; MATVEYEVA, V.V., red.; SKORYNINA, N.P., red.

[Chemistry in the natural sciences] Khimiia v estestvennykh naukakh. Leningrad, Izd-vo Leningr. univ., 1965. 216 p. (MIRA 18:9)

1. Leningrad. Universitet.

LEBEDEV, V.I.; LEBEDEV, A.I.

Causes of relative early appearance and a single stage development of organisms building their shells from fluorapatite.  
Geokhimiya no. 12:1204-1209 9 1965 (MIRA 19:1)

1. Institut zemnoy kory i geologicheskoy fakul'tet Leningradskogo gosudarstvennogo universiteta. Leningrad. Submitted October 22, 1964.

LEBEDEV, V.I. (Moskva); BABURIN, O.V. (Moskva)

Calculation of integrals in the sense of the principal value,  
weights and nodes for Gaussian quadrature formulae. *Mat. i mek.*  
mat. i mek. fiz. 5 no.3:454-462 My-Je '69. (NIPA 12.7)



DMITRIYAN, A.I.; -EDITION, A.I.

Stand to ring of absorption of light, a few typical examples of such  
leaves. Image: 1986-02-01, 1986-02-01.

(RDP: 1986)

1. Rabotnikiya go vishodit na krasnom. Vostok, image: 1986-02-01-  
vostok: 1986-02-01, 1986-02-01.



5(4)

SOV/76-33-2-17/45

AUTHORS:

Nesmeyanov, An. N., Smakhtin, L. A., Choporov, D. Ya.,  
Lebedev, V. I.

TITLE:

An Investigation Into the Thermodynamics of Solid Solutions  
of Gold, Silver, and Copper I (Issledovaniye po termodinamike  
tverdykh rastvorov zolota s serebrom i med'yu I)

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2,  
pp 342 - 348 (USSR)

ABSTRACT:

Because the components of solid solutions have such an  
exceptionally low vapor pressure investigations of the thermo-  
dynamic properties of such solutions by measurement of the  
partial pressure are very difficult. These measurements could  
be facilitated by the use of radioactive isotopes. In this  
paper data are given for the vapor pressure of solid Au, Ag,  
and Cu, since the literature data for the pressure of saturated  
vapor of these metals are very contradictory. Pure metals  
(99.9%) and the radioactive isotopes Au<sup>198</sup>, Ag<sup>110</sup>, and Cu<sup>64</sup>  
were used. The vapor pressure was measured using the effusion  
method of Knudsen and an appropriate apparatus (Fig 1). The  
effusion space was produced from molybdenum. From the experi-

Card 1/3

. An Investigation Into the Thermodynamics of Solid  
Solutions of Gold, Silver, and Copper I

SOV/76-33-2-17/45

mental data on the vapor pressure (Tables 1-3) the following equations were obtained using the method of least squares: for Ag in the interval 770-960°C  $\lg p = -14058/T + 8.8550$ ; for Au at 820-1050°C  $\lg p = -18016/T + 8.6833$ ; for Cu at 920-1080°C  $\lg p = -17320/T + 9.320$ . The latent heats of sublimation at absolute zero  $\Delta H_0^\circ$ , were calculated and the following results were obtained: for Ag 67630±50 cal/gram atom; Au 87520±110 cal/gram atom; Cu 80980±140 cal/gram atom. A comparison of the data obtained with those of other authors (concerning the pressure of the saturated vapors of solid Ag) (Figs 2-4) indicates that the most reliable data are given in the paper by Macabe and Birchenall (Makeyb) (Ref 4) and in the present paper, while the values found by Shadel and Birchenall (Ref 5) are too high and the values found by Harteck (Gartek) (Ref 6), Langmuir (Lengmyur) (Ref 7), and An.H.Nesmeyanov et al (Ref 8) are too low. The most reliable values for liquid Ag were obtained by Fischer (Fischer)(Ref 9). Data on the vapor pressure of solid Cu by Herish (Gerish)(Ref 10), Marshall, Dornte and Norton (Marshall)

Card 2/3